AEROSPACE MATERIAL SPECIFICATION

AMS4244™	REV. D

Issued 1987-01
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Revised 2022-08

Superseding AMS4244C

Aluminum Alloy, Welding Wire 4.6Cu - 0.35Mn - 0.25Mg - 0.22Ti for Welding A206.0 Type Alloys

RATIONALE

AMS4244D results from a Five-Year Review and update of this specification with changes to prohibit unauthorized exceptions (3.7, 4.4.1, 5.3.1, 8.5), update applicable documents (Section 2, 8.2), and allow the use of the immediate prior specification revision (8.4).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of two types of welding wire.

1.2 Application

This wire has been used typically as filler metal for gas-metal-arc and gas-tungsten-arc welding of aluminum alloy castings having similar composition (206.0 and A206.0) and requiring response to heat treatment, properties, and corrosion resistance in the weld zone comparable to those of the castings, but usage is not limited to such applications.

1.3 Classification

Wire supplied to this specification is classified as follows:
Type 1 - As Extruded and Sized
Type 2 - As Drawn

1.3.1 Unless a specific type is ordered, either type may be supplied.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/AMS4244D/

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2355 Quality Assurance Sampling and Testing of Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings

AMS2813 Packaging and Marking of Packages of Welding Wire, Standard Method

AMS2814 Packaging and Marking of Packages of Welding Wire, Premium Quality

AMS2816 Identification, Welding Wire, Tab Marking Method

AMS2819 Identification, Welding Wire, Direct Color Code System

ARP1876 Weldability Test for Weld Filler Metal Wire

ARP4926 Alloy Verification and Chemical Composition Inspection of Welding Wire

AS7766 Terms Used in Aerospace Metals Specifications

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS2355.

Table 1 - Composition

Element	Min	Max
Silicon	--	0.05
Iron	--	0.10
Copper	4.2	5.0
Manganese	0.20	0.50
Magnesium	0.15	0.35
Nickel	--	0.05
Zinc	--	0.10
Titanium	0.15	0.30
Tin	--	0.05
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.1.1 Chemical analysis of initial ingot, bar, or rod stock before drawing is acceptable provided the processes used for drawing or rolling, annealing, and cleaning are controlled to ensure continued conformance to composition requirements, and the facility employs procedures to ensure traceability of wire to the originally analyzed source.

3.2 Condition

Wire may be made by any method unless a specific method is specified. Wire shall be in a temper and with a surface finish which will provide proper feeding of the wire in machine welding equipment.

3.3 Fabrication

Butt welding is permissible only at diameters larger than final finished product provided both ends to be joined are alloy verified using a method capably of distinguishing the alloy from all other alloys processed within the facility or the repair is made at the wire processing station. The butt weld shall not interfere with uniform, uninterrupted feeding of the wire in machine welding equipment.

3.3.1 Residual elements, drawing compounds, oxides, dirt, oil, dissolved gases and other foreign material picked up during wire processing that can adversely affect the welding characteristics, the operation of the equipment, or the properties of the weld metal, shall be removed by cleaning processes which will neither result in pitting nor cause gas absorption by the wire or deposition of substances harmful to welding operations.

3.4 Weldability

Melted wire shall flow smoothly and evenly during welding and shall produce acceptable welds. ARP1876 may be used to resolve disputes.

3.5 Quality

Wire, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to welding operations, operation of welding equipment, or properties of the deposited weld metal.

3.5.1 Winding

Filler metal in coils and on spools shall be wound so that kinks, waves, sharp bends, overlapping, or wedging are not encountered, leaving the filler metal free to unwind without restriction. The outside end of the electrode (the end where welding is to begin) shall be identified so it can be located readily and shall be fastened to avoid unwinding. The winding shall be level winding.

3.6 Sizes and Tolerances

Wire shall be supplied in the sizes and to the tolerances shown in 3.6.1 and 3.6.2.

3.6.1 Diameter

3.6.1.1 Extruded Wire

Shall be as shown in Table 2:

Table 2A - Sizes and diameter tolerances, inch/pound units

Form	Nominal Diameter Inches	Tolerance Inches Plus	Tolerance Inches Minus
Cut Lengths	0.047, 0.062, 0.094, 0.125	0.007	0.007
Spools	0.030, 0.035, 0.047, 0.062, 0.094	0.002	0.002

Table 2B - Sizes and diameter tolerances, SI units

Form	Nominal Diameter Millimeters	Tolerance Millimeters Plus	Tolerance Millimeters Minus
Cut Lengths	1.19, 1.57, 2.39, 3.18	0.18	0.18
Spools	0.76, 0.89, 1.19, 1.57, 2.39	0.05	0.05

3.6.1.2 Drawn Wire

Shall be as shown in Table 3:

Table 3A - Sizes and diameter tolerances, inch/pound units

Form	Nominal Diameter Inches	Tolerance Inches Plus	Tolerance Inches Minus
Cut Lengths	0.047, 0.062, 0.094, 0.125	0.003	0.003
Spools	0.030, 0.035, 0.047	0.001	0.002
Spools	0.062, 0.094	0.002	0.002

Table 3B - Sizes and diameter tolerances, SI units

Form	Nominal Diameter Millimeters	Tolerance Millimeters Plus	Tolerance Millimeters Minus
Cut Lengths	1.19, 1.57, 2.39, 3.18	0.08	0.08
Spools	0.76, 0.89, 1.19	0.02	0.05
Spools	1.57, 2.39	0.05	0.05

3.6.2 Length

Cut lengths shall be furnished in 36 inch (914 mm) lengths and shall not vary more than +0, -1 inch (+0, -25 mm) from the length ordered.

3.7 Exceptions

Any exceptions shall be authorized by the purchaser and reported as in 4.4.1.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The producer of wire shall supply all samples for producer's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the wire conforms to specified requirements.

4.2 Classification of Tests

4.2.1 Acceptance Tests

Composition (3.1) and sizes and tolerances (3.6) are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests

Weldability (3.4) is a periodic test and shall be performed at a frequency selected by the producer unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing

Shall be in accordance with AMS2355.

4.4 Reports

The producer of wire shall furnish with each shipment a report showing the results of tests for composition of each lot, and stating that the wire conforms to the other technical requirements. This report shall include the purchase order number, AMS4244D, lot number, nominal size, and quantity from each lot.